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ANÆSTHESIA AND ANÆSTHETICS *

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WHILE surgeons for many years have advocated the so-called "team-work" in their operating rooms, operating for years with the same assistants, trained in the methods of the operator, but slight thought has been given, until recently, to the selection of the anæsthetist. In general hospitals the junior interne, fresh and inexperienced and just graduated from the medical college, where he had received no instruction in anæsthetics and anæsthesia, was almost uniformly selected as the anæsthetist. By the time that this interne became fairly skilful in the administration of anæsthetics he was transferred to other service in the hospital and his place as anæsthetist taken by another inexperienced man. Finally, however, surgeons began to realize that a poorly administered anæsthetic had much to do in the production of surgical shock and thus became an important factor in the post-operative mortality rate. The recognition of this fact and the determination to reduce the mortality rate following operation to the lowest possible point, made necessary the employment of specially trained anæsthetists who, having no ambitions to become surgeons, would not only give their undivided attention to the patient and the anæsthetic, but also continue in the same work year after year, becoming more efficient and more valuable as time passed and as experience grew.

Many of the best surgeons in America are employing graduate nurses as their anæsthetists, notable among them being the Drs. Mayo of Rochester, Drs. Murphy, Bevan and Ochsner of Chicago, and Dr. Crile of Cleveland.

A nurse of pleasing personality has a gentle, quiet way about her which makes for composure and confidence in the patient. Excitement and fear are banished by her comforting and soothing words and, in many instances, she practically sings the patient to sleep, assisted by a much smaller quantity of the anæsthetic than would be possible otherwise.

We have local and general anæsthetics. Of the local anæsthetics, cocain in some of its forms, dissolved in sterile water, is the one most frequently employed. This may be applied to mucous surfaces by

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simply brushing the cocain solution over the parts and allowing it to remain until absorbed. In the skin and deeper structures, infiltration anæsthesia is employed. Here the cocain solution is injected into the tissues by a hypodermic needle, and the distention of the parts as well as the absorption of the cocain acts to produce an anæsthetic state.

This infiltration anæsthesia has been employed by Dr. Smith quite often in operating on perforation of the intestine occurring in the course of typhoid fever. Typhoid fever patients are bad subjects for general ether anæsthesia. However, nitrous oxide gas and oxygen have not the depressing effect of ether, and this method of general anæsthesia bids fair to displace infiltration anæsthesia in typhoid patients.

Ethyl chloride, in the form of a spray, freezes the skin and so becomes an anæsthetic. Ice applied to the skin has some anæsthetic action, as also has carbolic acid in spray form.

Of the general anæsthetics we have chloroform, ether, and nitrous oxide gas with oxygen, named in the order of their mortality rate when administered by the ordinary anæsthetist to the ordinary patient.

Chloroform, as a universal anæsthetic, has seen its best days, although it still holds a valuable place in obstetric surgery.

Ether was first employed at the Massachusetts General Hospital by Morton in 1846 and to-day is the best and safest anæsthetic for general purposes, when administered by a competent person, with the one exception of nitrous oxide gas and oxygen.

The best method employed in the administration of ether is that known as the open drop method. Some form of Esmarch inhaler covered with from four to eight thicknesses of gauze is employed. At first the inhaler is held at a short distance from the face, in order that the patient may receive plenty of air, thus avoiding that sense of suffocation of which so many otherwise complain. Soon the inhaler is placed upon the face and the administration of the ether continued drop by drop until surgical anæsthesia is obtained.

In my own experience with ether as an anæsthetic, I have found that certain conditions regarding the pupils of the eyes have been of great value in determining the degree of anæsthesia, and I would recommend as safe rules for guidance:

(1) With a moderately dilated pupil, responding to light, with cornea reflex present, the patient is just going under.

(2) With a moderately contracted pupil, responding to light, without cornea reflex, the patient is safely surgically anæsthetized.

(3) With a largely dilated pupil, that does not respond to light, with cornea reflex present, the patient is in danger.

(4) With a pin point pupil that does not respond to light, with cornea reflex absent, the patient is dying.

Some anæsthetists say that it is not necessary to watch the eyes or pulse when giving ether, and that the respiration and color are of the greatest importance. To this I cannot agree and, while not ignoring the value of respiration and color, place greater dependence upon the condition of the pulse and the pupils.

The administration of ether, as well as of nitrous oxide, should be preceded by a hypodermic injection of morphine $\frac{1}{8}$ to $\frac{1}{4}$ grain, and of atropine $\frac{1}{150}$ to $\frac{1}{100}$ grain; or, as advocated by Dr. Crile in gas anæsthesia, morphine $\frac{1}{6}$ grain and scopolimine $\frac{1}{100}$ grain. These should be given one-half hour to one hour preceding the use of the anæsthetic. Dr. Crile claims that scopolimine, better than any other drug, does away with that element of fear, which is such an important factor in post-operative mortality.

Before the patient is sent to the operating room, it is well to have the mouth and teeth thoroughly cleaned and the nose sprayed with some cleansing and antiseptic solution. These precautions somewhat lessen the dangers of post-operative pneumonia. It is also advisable to have the stomach empty, even if the stomach tube must be used.

We think it a good plan to have the nurse in charge of the patient accompany her to the operating room, and to have previously explained to her what will be done and what is expected of her in the taking of the anæsthetic.

In arranging the position of the patient on the table before beginning the anæsthetic, the head should be so placed that all the muscles of the neck are relaxed. The lower jaw should be held forward and upward. Absolute silence should prevail in the room during the beginning of the anæsthesia, and no surgical preparation of the patient should be begun until anæsthesia is complete.

If the patient is kept warm and the chest well covered, not only during the operation, but especially afterward, there is not great danger of post-operative pneumonia. Old people are the ones most liable to pneumonia and it is advisable to place and keep them in a sitting posture immediately after the operation. This posture prevents passive congestion of the lungs.

There can be no rule as to the quantity of ether necessary to produce anæsthesia in any given case, as so much depends on the nature of the operation, the condition and personal peculiarities of the patient. Naturally, the shorter the period of anæsthesia and the smaller the quantity of the anæsthetic, the better. However, too small a quantity

of the anæsthetic will allow the patient to resist the surgeon, delay the operation and, through this delay, cause greater danger to the patient than would an increased quantity of anæsthetic.

After daily observation for several weeks of the administration of nitrous oxide gas and oxygen, at the clinic of Dr. Crile at Lakeside Hospital, and after witnessing, as a private student, nearly 100 gas-oxygen anæsthesias by Dr. Charles K. Teter, of Cleveland, I am convinced that this gas-oxygen method of anæsthesia is, in the hands of an expert administrator, by far the safest of all known methods. As Dr. Teter has well said, it is the safest of all anæsthetics in the hands of an expert, and the most dangerous in the hands of one not an expert. Dr. Crile refuses to allow an interne to give the gas-oxygen and insists upon its administration by his specially-trained and experienced graduate nurse.

Gas-oxygen is especially indicated in operating on patients greatly debilitated by sepsis, by profound hemorrhage or by exhausting disease. It can be safely given to patients with marked lung complications, and to those with structural disease of the kidney. In fact, it finds its greatest indications in those very cases where ether is so frequently contra-indicated.

CRITICAL PERIODS IN PROFESSIONAL LIFE *

“OVER-BALANCE.” To many just graduated in their profession there comes a feeling of “cocksureness,” if I may be allowed the expression. We are apt to go around with the air of asking people to question us so that we may show what we know. We develop hypertrophy of the centre of conceit so that it is an apparent diagnosis to the tyro. This is what I have called the over-balanced attitude. It does not affect all, but unfortunately many of us are victims of it, and we ourselves actually suffer during the period very acutely. This over-balanced attitude sometimes takes the form of intolerance toward the opinions of those who have had years of experience but who have not been trained in the strict modern scientific method. We are at times apt to sneer at theories which we have had the good fortune to see exploded by the newer methods of research. And in sneering at the theories we easily pass to the next stage, mild contempt for the one who expresses opinions as facts which are no longer facts. Let us not fall into this attitude. Let us hope that this pitfall will not catch any of you, that you may receive your diplomas with an ambitious but yet humble frame of mind. . . .

* Extracts from the address of Dr. Warfield, read before the graduates of Telfair Hospital, Savannah, Georgia.